A NOTE ON THE SYSTEMATIC POSITION OF THE GIANT LYCAENID BUTTERFLY LIPHYRA BRASSOLIS WESTWOOD

(Lepidoptera: Papilionoidea)

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The Indo-Australian butterfly *Liphyra brassolis* Westwood is one of the most unusual members of the family Lycaenidae. It is the largest member of the family (the length of the forewing in the male specimen examined was 36.9 mm.) and it has rather unusual habits. The larva lives in the nest of the green tree ant *Oecophylla smaragdina* (Fabricius) and preys upon the brood. It is protected from the ants by a smooth, very heavily sclerotized cuticle. The pupa is formed within the last larval skin, which continues to serve as a protective shield. The newly emerged adult is covered with loose scales which are torn off by attacking ants, diverting them long enough to permit the butterfly to escape.

At the time of his study of the higher classification of the butterflies, the author was unable to obtain a specimen of this unusual species for study. Since then a number of people have expressed the opinion that such a large and unusual lycaenid might not show the skeletal structure typical of the other members of the family. Recently, through the courtesy of Mr. J. Sedlacek of the California Academy of Sciences, a single damaged male specimen of this species has been obtained for dissection. It was found to possess the following characters (numbers refer to the characters enumerated in the diagnosis of the family Lycaenidae in Ehrlich, 1958, pp. 356-357; "Clench" indicates characters missing on the specimen studied, but described in Clench, 1955.): 1) eyes emarginate; 2) eyes bare; 3) face flat; 4) laterofacial sutures nearly contiguous with eye margins; 5) paraocular areas extremely narrow; 6) antennae close together; 7) anterior tentorial pits very low on face; 8) proboscidial fossa deep; 9) labial palps shorter than thorax; 10) labial sclerite well sclerotized around the palpal sockets; 11) anterior tentorial arms slightly crested; 12) antennae not carinate; 13) cervical sclerites not united beneath neck; 14) dorsal plate of pronotum broad; 15) ? (spinasternum destroyed); 16) profurcal arms simple; 17) intercoxal lamella prominent; 18) lateral plates of pronotum fused dorsally to form a V-shaped structure; 19) patagia membranous (apparently — area partially destroyed);

20) ? (area of parapatagia destroyed); 21) presternum present; 22) adnotale not sagittate; 23) lamella of mesodiscrimen curves down to base of furca; 24) processes of second phragma fairly prominent; 25) precoxal suture present, nearly complete; 26) pre-episternum of same magnitude as katepisternum; 27) mesothoracic anepisternum not present as a sparate sclerite; 28) prescutum vertical; 29) meral suture and lamella absent; 30) third phragma consisting of simple stalks; 31) metatergum not completely overhung by mesotergum; 32) caudal part of metathoracic epimeron thin; 33) prespiracular bar fully developed; 34) postspiracular bar reduced; 35) cubitus of forewing apparently trifid; 36) 3V present, weak, fusing with 2V; 37) hind wing with two vannal veins; 38) prothoracic legs bearing claws (Clench); 39) protibial epiphyses absent (Clench); 40) tarsal claws simple; 41) aroliar pad well-developed; 42) pupa in skin of last larval instar; 43) larva without osmateria.

As can be seen from the foregoing, *Liphyra* conforms well to the diagnosis given for the family Lycaenidae. The only notable difference is in character no. 11; the tentorial arms are enlarged to approximately the degree seen in the papilionid genus *Cressida* (Ehrlich, 1958, fig. 21). Although it was not possible to determine the condition of the spinasternum (character no. 15), it seems safe to assume that it is not laterally produced since this structure is simple in all of the butterflies except the Papilionidae and the Pieridae. Similarly the parapatagia (character no. 20) are membranous in all of the butterflies except for a small group of the Nymphalidae. It therefore seems unlikely that they would be sclerotized in *Liphyra*.

Within the family Lycaenidae *Liphyra* appears to fit into the typical subfamily, Lycaeninae. It shows none of the characters (e.g. spinelike projection of the male prothoracic coxae below the articulation of the trochanter, distinct mesothoracic anepisternum, development of humeral and/or marginal veins in hind wing) usually associated with the other major subfamily, the Riodininae. It would seem, therefore, that at least on the basis of the adult morphology there is no reason to place *Liphyra* in a distinct family or subfamily, as has been done by various authors.

Literature Cited

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TWO NEW SPECIES OF TYPHLODROMUS FROM CALIFORNIA

(Acarina: Phytoseiidae)[1]

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While on a recent visit to California I collected Phytoseiidae in the area around Riverside and San Bernardino and also examined several excellent collections of these predacious, plant-inhabiting mites. Two hitherto unknown species were recognized, and descriptions and figures of these are given herein with specific diagnoses and an indication of their places in the keys to the family recently prepared by Chant (1960). Both species are of the subgenus *Amblyseius* as recently defined (Chant, 1957).

Typhlodromus (Amblyseius) newelli Chant, new species

(Figs. 1–3)

Female.—Length 420 μ; width 290 μ. *Dorsal shield* smooth, with 17 pairs of setae, of which nine are in the lateral row, two in the median, and six in the dorsal (Fig. 1). All dorsal (D) setae minute except D_1. Seta M_1 minute; M_2 longer, equal to L_6. Seta L_1 longer than D_1, L_2, or L_3. Setae L_2 and L_3 equal. Seta L_5 minute, much shorter than L_6. Seta L_9 the longest on the shield. Setae S_1 and S_2 on interscutal membrane. *Sternal shield* with only two pairs of setae. Two pairs of small metasternal plates, each with a seta. *Genital shield* normal, with a pair of setae. *Peritremal plates* broad, extending posteriorly around bases of coxae IV and anteriorly to the level of setae D_1. *Metapodal plates*, two pairs, one minute. *Ventrianal shield* (Fig. 2; 140 μ long, 115 μ wide) approximately rectangular with posterior margin rounded and lateral margins concave, and three pairs of preanal setae, a pair of pores, and a crease around anal opening. Four pairs of setae surrounding ventrianal shield; one (VL_1) long, curved. *Gnathosoma* and *maxillary palps* normal for the genus. Fixed digit of chelicera multidentate. *Coxae* all slightly reticulated. *Leg IV* with three macrosetae (Fig. 3), genu, tarsus, and basitarsus.

Male.—Unknown.

Diagnosis.—The relative lengths of setae L_2 and L_3 and of L_5

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